

CALIFORNIA ENERGY COMMISSION

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January 10, 2007

Dear Stakeholders:

Thank you for your continued interest and participation in developing a research roadmap to support avian and bat siting guidelines for wind developments in California.

As you know, the RD&D Committee of the Energy Commission authorized funding to support science related to improving pre-construction monitoring, post-construction monitoring and avian impact mitigation. We are in a planning phase and will define priorities in a research roadmap (plan). The purposes of this letter are to: 1) provide a brief workshop summary 2) update the schedule for producing the research roadmap, and 3) request you provide us with any available documentation (data and analysis) of past studies addressing the broad issue of wind development and avian mortality.

Workshop Summary

I would like to express my appreciation to those who assisted us in the very constructive November 2 workshop. A total of 48 people participated in person and via web-ex. Following presentations by me, Steve Ugortiz (NWCC), Sara McMahon (PPM Energy), and Linda Spiegel, (posted on web site at www.energy.ca.gov/renewables/06-Oil-1/documents/index.html#110206), the group discussed a list of 39 possible research topics developed by Energy Commission staff. The group reviewed, and as appropriate, modified the list, and ultimately defined research priorities. It was noted by several participants that a well crafted study design could address multiple topics. The following are the top five topics (the last two tied) that emerged from the workshop. Even if topics are not in the top five, they will be considered in the roadmap in the context of guidelines research.

- Are pre-construction surveys adequately estimating mortality?
- What is the appropriate duration of monitoring to adequately account for annual variation in fatalities due annual variation in use? Can long-term periodic monitoring (e.g. every 3 years) capture that variation as well as yearly monitoring?
- What information on bat and migratory songbird migration and habitat use would be useful for estimating mortality?

- How well does observation data on bird/bat use and behavior estimate potential levels of mortality?
- What combination of bat and migratory songbird sensing techniques (radar, acoustic monitoring, thermal imaging, night vision devices) provides the most reliable data set on bat and migratory songbird occurrence?
- Can micro-siting in low risk areas and removing turbines from high risk areas reduce fatalities?

In general, these topics emerged as the priorities because of the general consensus that scientific uncertainty remains in the methods and metrics for pre-construction monitoring relative to assessing the risk of avian and bat impacts.

A summary of the workshop, the presentations and the revised research list are all posted at the above web page. The complete revised research list is also attached.

Schedule

The schedule for finalizing the roadmap was initially established to occur after the release and adoption of the siting guidelines by the Facility Assessment and Siting Office. These guidelines were originally scheduled for release in December 2006. Under that scenario, a draft roadmap was scheduled to be released in late January, followed by a public workshop in February, and a final roadmap in March.

The schedule for releasing the draft and final siting guidelines has changed. The draft was released in late December and will be followed by a workshop in January, a Committee Hearing in February, release of a final draft in May and adoption by the Committee in June. The period for public comment will end in February for the draft guidelines and in June for the final guidelines.

We believe, as do key stakeholders, that the research roadmap compliments and supports the siting guidelines. Thus, we are rearranging the research roadmap development schedule to follow the guidelines schedule. We will release our draft roadmap shortly after the final guidelines are released. The proposed roadmap schedule is:

- Early February – Committee workshop on draft guidelines
- February 15 – Request date for data and studies to PIER-EA
- March 30 – Draft roadmap
- April – Staff workshop on the draft roadmap
- June – Final Avian Wind Guidelines released
- August – Final roadmap released

Request for Information

At the workshop there was extensive discussion about past avian studies and other on-going bird and bat studies sponsored by industry.

We received several comments at the workshop and in subsequent written comments expressing concern about possible duplication and recommending we conduct a thorough literature review. Much of this research is however, not published in the peer-reviewed literature.

We're requesting your help in identifying key studies and providing us with the most current information available. The most expedient method is to provide the report itself or a direct link that allows us to access that report. Alternatively, we'd appreciate your providing us with the name of the project and contact information of the project manager. Any assistance you provide is highly valued but we must caution that the alternate route is more time consuming and not always successful. To ensure the information you feel is important be reviewed and incorporated into the roadmap, your submittals should be provided by February 15, 2006.

Implementing a research program is an ongoing process. To ensure the program stays current and that, in the future, research proposals are valid and non-duplicative of on-going research, we recommend that this networking and sharing of information be a permanent effort by all parties. Assuming there is sufficient interest and participation; we are planning to pursue development of a web-based bibliography of pertinent reports and published papers. We have developed a similar web-based, searchable bibliography of avian interactions with transmission and distribution lines, available at www.energy.ca.gov/pier/environmental/avian_bibliography

We welcome your continuing participation in this process to develop a pertinent and successful research program. If you have any questions or comments, please contact Linda Spiegel at lsiegel@energy.state.ca.us, 916.654.4703, or Melinda Dorin at mdorin@energy.state.ca.us, 916.654.4024. You can send reports to either Linda or Melinda either electronically at the above email addresses or hard copies at 1516 Ninth Street MS-43, Sacramento CA 95814.

Sincerely,



Kelly Birkinshaw
Program Manager – PIER Environmental Area

RESEARCH NEEDS TO SUPPORT AVIAN/BAT ASSESSMENTS AND MITIGATION AT WIND FACILITIES IN CALIFORNIA

Draft List of Research Topics

(As edited and added to during November 2, 2006 Workshop)

[Note: The values indicated at the end of each numbered research topic reflect the number of votes received during a prioritization exercise.]

Pre-construction

What are the appropriate search intervals and methodologies to gain adequate, comparable information on bird use of a site, bird behavior, and what the trade-offs are between cost, accuracy, and precision?

1. What are the appropriate frequencies, durations, and radii of point counts/visual observation scans? (10)
2. How well does observation data on bird/bat use and behavior predict potential levels of mortality? (13)
3. Can information on bird use, bird abundance, species vulnerability, topography lead to map-based indicators of collision risk? (10)
4. Can a meta-analysis of comparable data from several projects lead to an indicator of high risk situations? (10)
5. Are the heights of bird migration routes generally higher than collision risk zones? (7)
6. Is radar an effective method for determining risk? (5)
7. Can surveys conducted at dawn and dusk alone predict risk? (Songbirds? Bats?) (3)
8. What are adequate time intervals to conduct surveys (ground and radar) to account for seasonal and annual variation of use? (9)
9. Can use data alone effectively micro-site turbines in low risk locations? (0)
10. What are the appropriate metrics to determine site use? What should we be measuring? What is the best way? (3)
 - *What should we be measuring? What is the “best” way? – policy question*
 - *Often tradeoff between accuracy, precision and cost*
11. How do site utilization metrics differ by the use of different technologies (radar, night vision, thermal imaging, and acoustic detections)? (2)
12. What combination of bat and migratory songbird sensing techniques (radar, acoustic monitoring, thermal imaging, night vision devices) provides the most reliable data set on bat and migratory songbird occurrence? (12)
13. What information on bat and migratory songbird migration and habitat use would be useful for predicting mortality? (14)
14. What activity levels of bats and migratory songbird in an area would be considered high risk? (6)

Post-construction

What are the appropriate methods and metrics to accurately estimate levels of mortality due to wind turbine operations and how well did the pre-construction assessment predict impacts?

15. What is the appropriate duration of monitoring to adequately account for annual variation in fatalities due annual variation in use? Can long-term periodic monitoring (e.g. every 3 years) capture that variation as well as yearly monitoring? (16)
 - *Usefulness of Wildlife and Response Reporting System*
16. What are the adequate search intervals and search radii for the various turbine heights to capture a high percentage of fatalities? (11)
 - *Search radii has been very useful across the State*
 - *The search intervals will vary by site - split into #16 and #38*
17. What is the percentage of actual fatalities found necessary to provide confidence in estimating mortality? (8)
18. What is the level of baseline, non-turbine related mortality? (6)
19. Is the number of dead bats and songbirds found an accurate indication of bats and songbirds killed? (4)
 - *Searcher bias, scavenger and "poof"*
20. How does the taxa, size and condition (i.e. frozen) of different species affect the outcome of scavenger removal trials? (2)
21. What is the appropriate duration and metric (some use percentage of carcass remaining after so many days and some use mean number of days until all carcasses are removed) to measure scavenger removal rates? (4)
22. Are the equations used to estimate scavenger removal appropriate? (2)
23. Can the use of dogs to find carcasses be efficient and cost effective? (2)
24. What is the most appropriate fatality metric (e.g. fatality/MW, fatality/actual MW output/bird utilization) to adequately compare sites? (7)
25. Are pre-construction surveys adequately predicting mortality? (21)
26. Do patterns of bird and bat avoidance and scavenger use change after construction of wind facilities? (13)
27. What is the level of bat mortality at all California wind facilities? (6)
28. What is the level of bird mortality at all California wind facilities? (6)

Prevention/Avoidance/Mitigation

What information is necessary to develop appropriate mitigation measures and to understand the efficacy of those measures?

29. What turbine designs are more likely to result in collision? (7)
30. Can micro-siting in low risk areas and removing turbines from high risk areas sufficiently reduce fatalities? (12)
31. Can blades be made more visible to birds or bats? (6)
32. Can periodic shut downs reduce fatalities? (7)
33. How can habitat manipulations (e.g., rodent control, other prey reduction techniques) reduce bird use near turbines and reduce fatalities to acceptable levels? What impacts would they have on other species? (7)
34. Is it feasible to design a study to determine population level effects of local fatalities (particularly for winter migrants)? (2)
35. Are there ways to deter birds and bats from turbines? (10)
36. How effective is providing habitat off-site as a measure to compensate for impacts at wind facilities? (7)

New Ideas

37. New Survey Technology: Develop and testing (3)
38. What are the adequate search radii for the various turbine heights to capture a high percentage of fatalities? (6)
39. New Technology: Prevention/ avoidance/ minimization (6)

Flipchart Notes

Overarching Comments

- Compatibility over time
- Linkage to guidelines (they may affect priorities)
- Relative amounts of knowledge?
 - Least → songbirds, bats
 - Most → raptors
- Technological ideas/options fit in (as opposed to methodologies)
- Specificity vis a vis species
 - Songbirds
 - Raptors
 - Bats
 - Other...
 - Methodology may differ

Criteria (?)

- Relative amount of knowledge
- Species
- Short-, mid-, long-term
- Statewide applicability
- Use existing data – meta analysis
- What are the real, existing problems?
- Where do we already do things well?
- Where can we do things better?
- Night
- Standard metrics
- Cost
- Feasibility
- “Bang for the buck”

Possible Categories

- Risk assessment
- Survey efforts
- Survey methods
- Impact minimization